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**GEOLOGIC AND MINERAL AND WATER RESOURCES INVESTIGATIONS
IN WESTERN COLORADO, USING SKYLAB EREP DATA**

Monthly Progress Report

September 1974

**EREP Investigation 380
Contract NAS-13394**

**Dr. Keenan Lee
Geology Department
Colorado School of Mines
Golden, Colorado 80401**

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**Mr. Martin Miller, Technical Monitor
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INTRODUCTION

The primary objective of the CSM Skylab Program is to analyze EREP data for geologic information. To this end, the research has been subdivided into the following tasks;

- Task I. The PI shall assist NASA/MSC in mission planning activities related to the proposed investigation.
- Task II. The investigator will screen all EREP data obtained over Colorado and will select frames for detailed study.
- Task III. The investigator will prepare photogeologic maps using selected S-190 photographs, and will analyze them to determine what geologic information may be contained in them.
- Task IV. The geological interpretations obtained in Task 3 will be compared to interpretations obtained from S-192 imagery, and to interpretations made from ERTS-I imagery.
- Task V. The geological interpretations will be verified by means of interpretation of aerial photographs, published geological reports, and field observations.
- Task VI. The investigator will prepare recommendations for the optimum type, scale, and resolution of imagery to be used for studies of regional geology and exploration for mineral deposits and water resources.

Progress

Overall Status

With this report Milestones 1 through 25 have been achieved, with the following exceptions: Milestones 14 and 16 are in progress, with anticipated completion during the next reporting period; Milestone 18 has been partially completed; Milestone 20 has not been completed due to lack of receipt of S192 processed data.

Past Month's Activities

During September, a final indexing of Skylab 2, 3, and 4 data was begun. Indexing will be by mission and sensor, and maps will accompany the index.

The final evaluation of the usefulness of aircraft and orbital imagery in the investigation of linear features and their correspondence to lineaments (geologic faults, folds, and joint patterns) was completed for the Front Range.

In the Central Colorado mineral deposit study, field work in support of research was completed except for mapping gross lithologies in the Precambrian. The percentage of "pink minerals" (potassium feldspars, limonite-hematite, etc.) will be contoured to determine whether color anomalies seen in the Precambrian are related to the percentage of micro-clines or to iron alteration. A color anomaly just north of the main study area, observed on Skylab photography, was field checked and is a talus slope composed of limonitized dolomite.

Lineaments statistics from field notes in the San Juan area are being compiled for approximately 23 lineaments located on Skylab and ERTS photography and imagery and field checked

during August 1974. Evaluation continues on the relationship of regional-scale structures to the larger-scale structures and tectonic elements of the region.

Skylab and ERTS photographs and imagery of the central Colorado Front Range are being interpreted for principal age groups of Precambrian plutons. Contacts between metamorphic wall rocks and plutons have been delineated.

Photogeologic interpretation of Skylab 2, T.48 data of northwestern Colorado was begun in September. Plots of folds are similar to those derived from ERTS interpretation of the same area. Because of larger scale and stereo coverage, detection was considerably easier. The entire area studied on ERTS was not covered by the Skylab interpretation because of scale differences and cloud cover on the latter.

Planned Activities for Current Month

Research in October will continue to be directed towards analysis of summer field work.

Travel

There was no travel during September.

Short periods of field work during October are anticipated, as weather and schedules permit.

Outlook and Recommendation

Progress continues to be satisfactory, and the project should be completed on schedule.



Keenan Lee
Principal Investigator